



INFRASTRUCTURE, SAFETY,
AND ENVIRONMENT

2nd Mileage-Based User Fee Symposium

Transition Issues and Research Needs

Paul Sorensen, RAND Corporation

April 20-21, 2010

Observations Are Based on Two Recent AASHTO-funded NCHRP Studies

- **NCHRP 20-24(69)**
 - Evaluation of options for implementing a national system of VMT fees in the near term
 - Completed June 2009
- **NCHRP 20-24(69A)**
 - Scope VMT fee trials that would be helpful to fund in the next authorization to prepare for implementation beginning as early as 2015
 - To be completed this summer

The Initial Study Was Motivated Largely by Concerns Over Declining Revenue

- **Fuel tax revenue has been increasingly undermined by political and structural liabilities**
- **Road-use fees based on vehicle miles of travel (VMT fees) offer a promising replacement for fuel taxes**
- **Many have assumed that transitioning from fuel taxes to VMT fees would take at least 10 years, but we face pressing revenue shortfalls now**
- **Would it be possible to implement VMT fees much more quickly, during the next surface transportation authorization?**



We Examined Nine Implementation Options, Ranging from Technically Simple to Sophisticated

- Self-reported odometer readings
- Periodic odometer inspections
- Assumed annual mileage with optional odometer inspections
- AVI with fees based on fuel consumption, fuel economy
- OBU with OBD II port connection
- OBU with OBD II / cellular
- OBU with GPS (configured for coarse resolution)
- OBU with GPS (configured for high resolution)
- RFID tolling on partial road network

Two Additional Concepts for Reducing Costs and Speeding Transition Were Highlighted

- **Interoperable or “open systems” architecture**
 - **Government publishes required specifications**
 - **Firms compete for market share based on price and value-added functionality**
 - **Drives down cost; allows continued innovation**
- **Voluntary “opt-in” period**
 - **Drivers may opt in to save money, gain greater convenience, gain additional valued services**
 - **Opt-in period demonstrates that common concerns related to privacy, enforcement, cost can be overcome**

The Study Recommended Further Effort to Prepare for National Implementation of VMT Fees

- **Several implementation options emerged as most promising (trading off cost vs. flexibility)**
- **But, remaining uncertainties make it difficult to select the best technical and institutional configurations at this time**
- **The next authorization provides an opportunity to fund a set of activities for prepare for potential implementation *beginning* in 2015**

Targeted Investments in Reauthorization Could Set the Stage for VMT Fees in 2015

- **Planning**
- **Analytic studies**
- **Technical research and development**
- **Trials**
- **Public education and outreach**

The Second Study Focuses on the Types of Trials That Would Be Helpful to Fund

- **What do decisionmakers need to know to:**
 - **Determine that it is appropriate and politically feasible to implement VMT fees?**
 - **Determine the mechanisms and institutional arrangements for implementing VMT fees?**
- **What subset of the relevant questions are best addressed through trials?**
- **How do we design trials to gain the necessary insights?**

What Do We Need to Learn / Decide?

- **Lacking consensus on what system must support:**
 - **Types of pricing**
 - **Ways of collecting revenue**
 - **Forms of privacy protection**
 - **Forms of enforcement**
 - **Other value added features**
 - **Open standards**

What Do We Need to Learn / Decide?

- **To build consensus and design the system, we may need more information about:**
 - **User views / political acceptability**
 - **Privacy**
 - **Pricing structures**
 - **Value-add features**
 - **Technical questions**
 - **Cost questions**
 - **Institutional questions**
 - **Potential transition strategies**

What Should We Explore Through Trials?

- What types of pricing
- Scale, geographic coverage, duration
- Specific technical, institutional, user acceptance, and phase-in issues
- Leadership and stakeholder participation
- Organization and management of trials
- Funding allocation
- State and local involvement
- Private sector involvement
- Trial participants
- Cost estimates
- Detailed test structure

*Interviews with Stakeholders
And Subject Matter Experts*

The Answers We're Hearing Are All Over the Map, Reflecting Different Perspectives & Assumptions

- **Who should lead development?**
 - States
 - Federal government
 - Private industry
- **How is the transition accomplished?**
 - Mandatory phase-in timeline
 - Indefinite opt-in period
- **How close are we?**
 - Still in exploration phase
 - Just a few more things to learn
 - Ready to roll trials directly into implementation

Different Perspectives Lead to Different Visions of What the Trials Should Accomplish

- **Potential visions**
 - **Help states help themselves**
 - **Learn enough to design a flexible federal system that states can opt into**
 - **Jump start the market to develop and deploy in-vehicle travel services, including the capacity to support federal and state VMT fees along with many other applications**
- **Structure of trials depends on your preferred vision (each has advantages and potential drawbacks)**

Helping States Help Themselves

- **Provide funding for states to explore the concepts that they're interested in**
 - **States may partner with technology providers, counties or municipalities, insurance providers, etc.**
- **Compete for funding, but fairly flexible**
 - **Consider transition plan**
 - **Consider eventual need for interoperability**
- **Smaller individual trials (thousands of participants)**

Developing a Carefully Planned Federal System

- **Bulk of funding devoted to carefully orchestrated set of trials intended to answer specific questions**
 - **Some flexibility for state innovation, mainly related to state-specific policy and institutional issues**
- **States would likely compete to participate, subject to:**
 - **Stricter requirements about what trials must include**
 - **Aim of testing in different regions, areas**
- **Move in the direction of open standards, but not essential to determine ahead of time**
- **Moderate sized trials in aggregate (tens of thousands)**

Jump Starting the On-Board Travel Services Market

- **On competitive basis, individually fund or subsidize:**
 - **Firms, states, municipalities, auto insurance, etc.**
- **Goal of rolling into implementation on an opt-in basis**
 - **Larger trials (hundreds of thousands of participants)**
 - **Focus on actual revenue collection**
 - **Early focus on standards in advance of trials**
- **Longer lead time**
 - **Standards development**
 - **Enabling state/local legislation or regulation**
 - **Development of PAYD insurance programs**
 - **Development of value-added services**

Which Vision to Pursue?

- **How much investment is required, and to what extent is the investment leveraged?**
- **How well does the vision address national objectives?**
- **How likely is it to lead to implementation; that is, how well does it address the most significant risks:**
 - **High cost of operating system**
 - **Enforcement challenges**
 - **User objections related to privacy, government overreach**

60 years



AHEAD OF THE CURVE